

X-ray Rocket Payloads for Key Technologies and Core Science

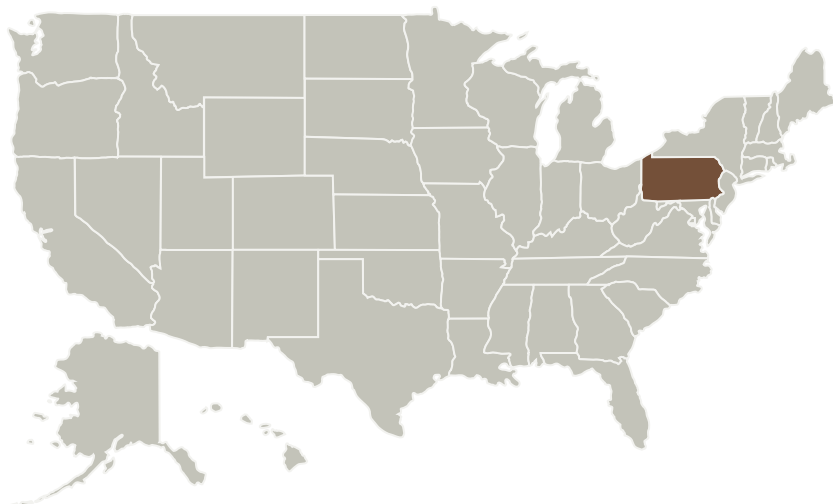
Completed Technology Project (2017 - 2020)



Project Introduction

The goal of this project is to fly two suborbital rockets for X-ray astronomical observations. The first flight will use an existing payload and replace the GEM detectors with state-of-the-art hybrid CMOS detectors, a key technology for future NASA missions. Concurrently, this payload will be the first science flight for the key water recovery technologies that are currently being developed by NASA's Sounding Rocket Program Office. We will fly from Kwajalein launch range and recover the payload from the water. This will be the first flight for both the X-ray hybrid CMOS detectors and the water recovery technologies. The latitude of Kwajalein allows for southern hemisphere exposure which is a large benefit for astronomical rockets. Given the large field of view for this payload, we will be observing a large portion of the Vela supernova remnant that has not been fully observed or characterized by current X-ray Observatories. We will detect key lines that indicate the temperature and ionization state of this plasma. The second payload has a science goal of concurrently observing with the Chandra X-ray Observatory to provide cross-calibration of the low energy spectral response. Such an observation will enable a new update to the response and contamination models that are critical to the Chandra Calibration Database. A detailed calibration of our payload will take place at the MPE PANTER X-ray facility. The throughput and spectral resolving power is designed so that the duration of a rocket flight will provide an adequate spectrum for cross-calibration with Chandra, the preeminent X-ray observatory.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Science Mission Directorate (SMD)

Responsible Program:

Astrophysics Research and Analysis

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Primary U.S. Work Locations

Pennsylvania

Project Management

Program Director:

Michael A Garcia

Program Manager:

Dominic J Benford

Principal Investigator:

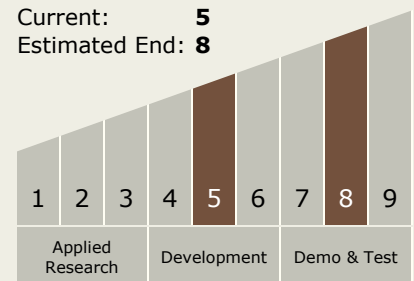
Randall L Mcentaffer

Co-Investigators:

Melissa T Gensimore
Gianpiero Tagliaferri
Abe Falcone
David N Burrows
Vadim Burwitz

Technology Maturity (TRL)

Start: 5
Current: 5
Estimated End: 8



Technology Areas

Primary:

- TX08 Sensors and Instruments
 - TX08.3 In-Situ Instruments and Sensors
 - TX08.3.1 Field and Particle Detectors

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Target Destination

Outside the Solar System